ENVIRONMENTAL ASSESSMENT AND
FINDING OF NO SIGNIFICANT IMPACT

# Minsinger Bench Reforestation Project

Environmental Assessment Number OR080-02-06

September 15, 2002

United States Department of the Interior
Bureau of Land Management
Oregon State Office
Salem District
Cascades Resource Area
Clackamas County, Oregon


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|---|---|
| Responsible Agency: | USDI - Bureau of Land Management |
| Responsible Official: | Richard C. Prather, Field Manager<br>Cascades Resource Area<br>1717 Fabry Road SE<br>Salem, OR 97306<br>(503) 375-5646 |
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**Abstract:** This environmental assessment discloses the predicted environmental effects of one action alternative and one no action alternative for federal lands located in Sections 20 and 21 of Township 2 South, Range 6 East, Willamette Meridian; and within the Sandy River Watershed. Alternative 2 is the proposed action. This alternative includes the broadcast and pile burning of scotch broom/pasture fields, ripping of existing pastures and planting of trees.

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# FINDING OF NO SIGNIFICANT IMPACT

## Introduction

The Bureau of Land Management (BLM) has conducted an environmental analysis (Environmental Assessment Number OR080-02-06) for a proposal to burn invasive plants and pasture grass, ripping of pasture/field lands to break up the compaction and plant native trees, shrubs and grasses. This will help restore the site to a forested condition and control the invasive species. The project area is within the Sandy River Watershed in Clackamas County within Township 2 South, Range 6 East, Sections 20 and 21, Willamette Meridian. The project is within the following land use allocations: Riparian and proposed Area of Critical Environmental Concern (ACEC).

The environmental assessment (EA) is attached to and incorporated by reference in this Finding of No Significant Impact (FONSI) determination.

Implementation of the proposed action would conform to management actions and direction contained in the *Salem District Record of Decision and Resource Management Plan* (RMP). The RMP, dated May 1995, is tiered to and incorporates the analysis contained in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement* (RMP/FEIS) (September 1994). The RMP provides a comprehensive ecosystem management strategy in conformance with the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late Successional and Old Growth Related Species Within the Range of the Northern Spotted Owl* (February 1994). It is also in conformance with the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late Successional and Old Growth Related Species Within the Range of the Northern Spotted Owl* (April 1994) and the *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (ROD, January, 2001) and the Final Supplemental Environmental Impact Statement for Survey and Manage, Protection Buffers, and Other Mitigation Measures in the Northwest Forest Plan (FSEIS, November, 2000).* The proposed action also conforms to direction described in the attached EA.

The EA and FONSI will be made available for public review from October 9 to October 31, 2002. The notice for public comment will be published in a legal notice by local newspapers of general circulation (Sandy Post); sent to those individuals, organizations, and agencies that have requested to be involved in the environmental planning and decision making processes; and posted on the Internet at http://www.or.blm.gov/salem/html/planning/index.htm under Environmental Assessments.

Comments received in the Cascades Resource Area Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before October 31, 2002 at 4:00 PM, Pacific Daylight Saving Time, will be considered in making the final decisions for this project. Office hours are Monday through Friday, 7:30 A.M. to 4:00 P.M., closed on holidays.

## Finding of No Significant Impact

Based upon review of the EA and supporting documents, I have determined that the Proposed Action (Alternative 2) is not a major federal action and will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area.

No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

Context. The proposed action is a site specific action directly involving 200 acres of BLM administered land that by itself does not have international, national, region wide, or statewide importance.

The discussion of the significance criteria that follows applies to the intended action and is within the context of local importance. Chapter 3 of the EA details the effects of the proposed action. None of the effects identified, including direct, indirect and cumulative effects, are considered to be significant and do not exceed those effects described in the RMP/FEIS.

Intensity. The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27.

1. **Impacts may be both beneficial and adverse.** Removing invasive species, burning the site, ripping the compacted pastureland and planting trees, shrubs, etc. would have a beneficial effect on soils, water, fish, and wildlife. The impact to scenic driving, which is a dominant value of the Mt Hood Corridor, can be either beneficial or adverse depending on the viewpoint of the driver. Much of the surrounding area is forested, so pasturelands add diversity. Since there is no view of the river itself and views of Mt. Hood across the pastures are very scenic from the opposite side of the road, the impact will be considered beneficial. Implementing seasonal restrictions on noise producing activities would reduce adverse effects to wildlife. No habitat modification for special status animals or plants would take place. Effects to water quality would be beneficial since the reduction of compaction of the soil will increase infiltration on the bench above the river. (Chapter 3, section A)

   None of the environmental effects disclosed above and discussed in detail in Chapter 3 of the EA and associated appendices are considered significant, nor do the effects exceed those described in the RMP/FEIS.

2. **The degree to which the selected alternative will affect public health or safety.** The project is expected to have a beneficial effect on public health and safety by removing invasive seed sources such as scotch broom, which can increase risk from fires.

3. **Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas.** There are no known historic or cultural resources, parklands, prime farmlands, or wildernesses located within the project area (EA Appendix A). The project is along the

Sandy River, and restoring the forest habitat is expected to have a beneficial effect for the riparian habitat and therefore, wildlife.

4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** The effects of the proposed action on the quality of the human environment were adequately understood by the interdisciplinary team to provide an environmental analysis. A disclosure of the predicted effects of the proposed action is contained in Chapter 3 of the EA and associated appendices.

5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** The proposed action is not unique or unusual. The environmental effects to the human environment are analyzed in the EA. There are no predicted effects on the human environment that are considered to be highly uncertain or involve unique or unknown risks.

6. **The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.** The proposed action does not set a precedent for future actions that may have significant effects, nor does it represent a decision in principle about a future consideration. Any future projects will be evaluated through the National Environmental Policy Act (NEPA) process and will stand on their own as to environmental effects.

7. **Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.** The interdisciplinary team evaluated the proposed action in context of past, present and reasonably foreseeable actions. Significant cumulative effects are not predicted. A complete disclosure of the effects of the selected alternative is contained in Chapter 3 of the EA.

8. **The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.** The proposed action will not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor will the proposed action cause loss or destruction of significant scientific, cultural, or historical resources (EA Appendix 1).

9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (ESA) of 1973. Terrestrial Wildlife:** *Northern spotted owl:* The effect call is “no effect”, since the area has no owls present and no critical habitat. *Bald eagle:* The effect call is “no effects”. The proposed project is outside the disturbance range of the bald eagle, which is 0.25 miles of a known bald eagle nest or communal winter roost site.

   **Fish:** Section 7 consultation with National Marine Fisheries Service is not required because the fish biologist has determined that the project would have “no effect” on ESA listed fish stocks

found in the Sandy River Basin; specifically, Lower Columbia River steelhead, Lower Columbia River Chinook and Lower Columbia River chum (EA Chapter 3, Section A).

10. **Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.** The proposed action does not violate any known Federal, State, or local law or requirement imposed for the protection of the environment. The EA and supporting Project Record contain discussions pertaining to the Endangered Species Act, National Historic Preservation Act, Clean Water Act, Clean Air Act, and Executive Order 12898 (Environmental Justice). State, local, and tribal interests were given the opportunity to participate in the environmental analysis process. Furthermore, the proposed action alternative is consistent with applicable land management plans, policies, and programs.

Prepared by: Barbara Kaible — 10-2-02 (Date)

Reviewed by: Carolyn D Scales, NEPA/Plans — 10/2/02 (Date)

Approved by: Richard C Prather — 20 OCT 2002 (Date)
Richard C. Prather
Cascades Resource Area Field Manager

ENVIRONMENTAL ASSESSMENT

# I. Chapter 1 - Project Scope

## *A. Project Location*

The project area, Minsinger Bench, is located in Township 2 South, Range 6 East, Sections 20 and 21, Willamette Meridian near Brightwood, Oregon, in Clackamas County. The Cascades Resource Area, Salem District of the Bureau of Land Management (BLM) with Land and Water Conservation Funds (LWCF), recently acquired this 250-acre parcel of land. The project area lies within the Sandy River Watershed. (See Figure 1).

The project area is within the following land allocations, habitats, or designations:

- Riparian Reserve use allocations as identified within the *Salem District Record of Decision and Resource Management Plan* (RMP) dated May 1995.
- Proposed Area of Critical Environmental Concern (ACEC)
- Visual Resource Management Area (VRM II)

## *B. Purpose of and Need for Action*

The purpose of this project is to begin restoring the pasturelands, which were recently acquired through LWCF funds and return it to a more natural forested condition. The project area has been severely impacted by an invading non-native plant, scotch broom and a long history of grazing has compacted the soils.

There is a need to restore the lands to a more natural condition as opposed to the historic agricultural use to meet the intent of "The Conservation and Land Tenure Strategy for the Sandy River and Mt. Hood Corridor". The lands fall within a Visual Resource Management (VRM) Class II category.

In order to expedite restoration it is necessary to begin treating the noxious weeds before they spread further and take over more of the site.

The BLM shares many general management goals with the Forest Service, state, counties, regional and local governments and interested organizations in preserving the high quality of life in this area through the conservation and restoration of the Sandy River's natural resources including protection and enhancement of water quality, wildlife and fisheries habitat, recreation opportunities, scenery and open space.

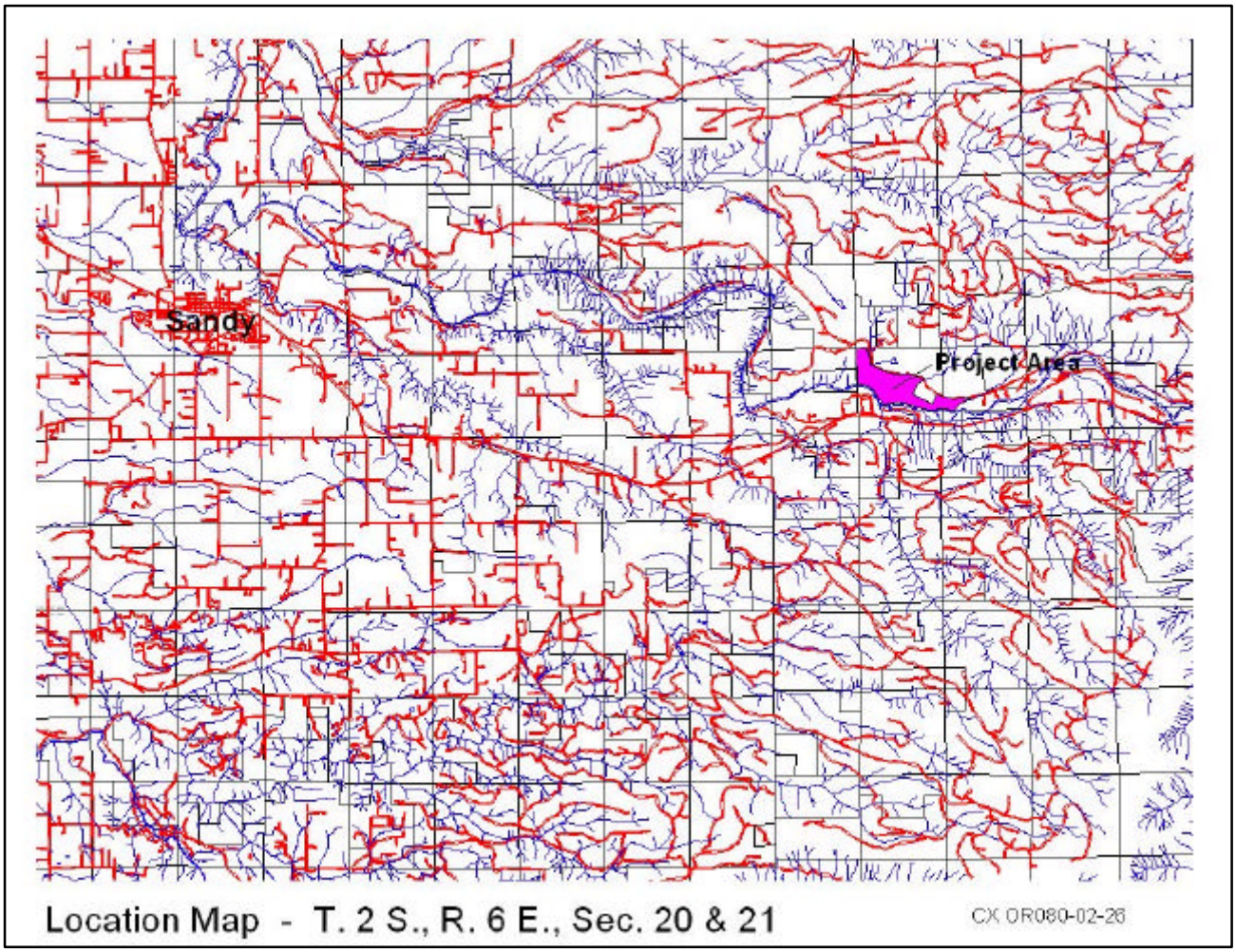


**Figure 1**

## *C. Proposed Action*

This project consists of burning the grass/scotch broom/blackberry pastureland and using a winged ripper to break up the subsurface and surface compaction of the fields prior to planting. The fields will be planted as they are prepared and trees and shrubs are available. The project is expected to take place over a period of two to three years.

## *D. Decision to be Made*

The Cascades Field Manager is the official responsible for deciding whether or not to prepare an environmental impact statement, and whether to approve this project as proposed, not at all, or to some other extent.

### *E. Issues and Other Elements of the Environment*

A scoping letter was mailed to over 100 of the public. No letters were received as a result of this scoping.

1. Issues: Considering public scoping and interdisciplinary team input, no issues were identified for this project.

2. Other Elements of the Environment: Chapter 3 will contain a discussion of the following elements of the environment: soils, water and fish; special status/attention species and habitats - terrestrial, invasive plants; and recreation and visuals.

## II. Chapter 2 - Alternatives

### *A. Alternative 1 (No Action)*

The BLM would not conduct any restoration activities at this time. Other methods of fuel reduction could include recutting the scotch broom and continuing to graze the land.

### *B. Alternative 2 (Proposed Action)*

The proposed action proposes to initiate restoration activities in order to stabilize the site from further invasive plant encroachment to provide more time to develop a long-term plan for the site. This project consists of burning the fields where invasive species have been cut. All the fields would be ripped with a winged ripper to break up the compaction of the subsoil. Native grasses, herbs, shrubs and trees would be planted such as Douglas-fir, western hemlock, western redcedar, grand fir and bigleaf maple, vine maple, Oregon grape and huckleberry. The project is expected to take place over a period of two to three years.

The burning will occur when the conditions are right for an effective prescribed fire. This will occur sometime between late fall and late spring to summer depending on the weather conditions. A line to contain the fire will be constructed around the burn perimeter. The actual burning will occur in accordance with the burn plan prepared for the project.

The ripping will occur when soil moisture conditions are appropriate.

The planting will consist of locally adapted native species. Vegetation would be planted in a random manner to create a natural appearing conifer forest in the future.

Two culverts, which cross West Creek and an overflow channel of the river, will be removed during low flows and natural drainage restored.


Areas to be burned
Areas to be ripped Fall 2002

### *1.* Soils, Water, And Fish

Best Management Practices designed to minimize erosion and sediment input to streams would be implemented to keep sedimentation well within State of Oregon Department of Environmental Quality (DEQ) standards. All of the ground disturbing activities would occur on the terraces above the 100-year floodplain and all streams would be buffered. The subsoiling would occur when soils are drained but still retain moisture.

### 2. Invasive plants

a. In order to reduce the potential for the establishment of additional populations of invasive plant species, all ground disturbing machinery would be cleaned of all mud, plant parts and debris prior to conducting ground disturbing activities in the project area. The machinery would be cleaned prior to entry onto BLM lands.
b. Locally adapted, native species seed would be used for all seeding.
c. The project area would be monitored every year for five years after project implementation to evaluate the resulting densities of invasive plant populations and to see if other invasive plants have invaded the project area
d. A regular monitoring and manual maintenance program would be institute for young stand plantation management.
e. Equipment used on site would be cleaned before being used on another site.

# III. Chapter 3 - Affected Environment and Environmental Effects

Chapter 3 shows the present condition (i.e., affected environment) within the project area as well as the changes that can be expected from implementing the action alternative or taking no action at this time (i.e., environmental effects). The "no action" alternative sets the environmental base line for comparing effects of the action alternatives.

The environmental effects (changes from present base-line condition) that are described in this chapter reflect the following elements of the environment (i.e., soils, water and fish; special status/attention species and habitats - terrestrial, invasive plants; and recreation and visuals). For those resources or values for which review is required by statute, regulation, Executive Order, or policy, Appendix A contains the appropriate documentation as to the effects of the proposed action on those resources or values.

For a full discussion of the physical, biological, and social resources of the Salem District, refer to the Final Environmental Impact Statement (FEIS), dated September 1994, for the Salem District Resource Management Plan. The discussion in this document is site specific[1] and supplements the discussion in the FEIS.

[1] This EA does not attempt to re-analyze all possible impacts that have already been analyzed in the FEIS, but rather to identify the particular site-specific impacts that could reasonably occur.

## *A. Soils, Water, and Fish*

### Affected Environment

The project area lies within the valley fill of the Sandy River valley. The topography of the area is somewhat diverse ranging from a nearly rolling terrace that occupies most of the area between the Sandy River and Marmot Road, to a steep embankment that drops abruptly to the Sandy River floodplain. Elevations in the area range from approximately 1,000 feet at Marmot Road to approximately 890 feet with the floodplain. The benches, typically level with steeply sloping sides, were formed by a combination of glacial and alluvial ("glaciofluvial") activities. There is a veneer of topsoil with a thick underlying substrate of glaciofluvial sands and gravels over volcanic and volcaniclastic basement rocks. The surface soils vary in thickness across the benches, but mostly consist of silts and gravel. An extensive study of the soil and gravel qualities was done during 1998 in a study of a potential gravel site while the land was under private ownership. [i] Two small creeks (one perennial and one intermittent) flow from the terraces and slopes north of Marmot Road down to the Sandy River. The perennial creek (West Creek) supports a population of resident cutthroat trout in its upper reaches (above Marmot Road). Both creeks have been impounded for agricultural purposes; however, one pond has recently breached, allowing pond waters to recede. Both creeks have little riparian vegetation.

The State Land Board concluded that the river is navigable because it meets the federal standards for navigability and therefore is eligible for a claim of public ownership.

### Environmental Effects

#### 1. Alternative 1 (No Action)

There would be no opportunity to increase soil infiltration. No changes in fish habitat or water quality would be achieved.

#### 2. Alternative 2 (Proposed Action)

*Soil Productivity:* Burning the invasive species and the sub soil ripping would mitigate some of the negative effects of soil compaction and begin the process of restoring the capability of soils to support forest vegetation.

*Water and Resident Fish:* Burning and sub-soil ripping should improve soil infiltration. Sediment losses from restoration activities are expected to be small and short-term since these activities would occur on the benches. Sedimentation produced by this project is not expected to decrease water quality since both small streams have impoundment features that will serve as settling ponds for any increase in sediment yield that may occur as a result of this portion of the project.

Removal of the culverts will be done at low water flows. One culvert is located above a settling pond. The other culvert is on a creek that flows into the river from the east along an old overgrown roadway. Once the vegetation is established on disturbed soil, sediment inputs to the stream associated with this site should be negligible, and should occur at levels considerably lower than current levels.

With the planting of native vegetation, the project is expected to have a long-term beneficial effect on summer stream temperatures and summer base flows in the small streams that traverse the benches.

Since the proposed action is fairly far removed from the main channel, effects to the physical, biological and chemical condition of the Sandy River are expected to be minimal and likely not measurable.

Fish in West Creek currently are found only upstream of Marmot Road, probably due to the poor habitat conditions found downstream of Marmot Road. Improvements in habitat quality that would result from this project may extend the reach of occupied fish habitat to the area downstream of Marmot Road. Removal of cattle from the streams and riparian areas, as well as re-establishment of riparian vegetation is expected to result in improved fish habitat.

No threatened or endangered fish stocks are found in the creeks that traverse the project area. There will be no effect to any listed stocks in the Sandy River Basin.

This alternative would not retard or prevent the attainment of the nine Aquatic Conservation Strategy (ACS) objectives, and may contribute to the restoration of ACS objectives 2 and 4. Refer to Appendix A for a discussion of the effects of this alternative on the ACS objectives.

### 3. Cumulative Effects

Because of the limited size and scope of the project, no cumulative effects to soils, water, or fish are expected. No other projects would be taking place within the vicinity of the project area during the implementation of this project.

## *B. Vegetation*

**Affected Environment**

The site is currently composed of a mosaic of vegetation communities that have developed largely in response to historic land use practices. Much of the site has been maintained as open pastureland for many years, though some areas are less actively grazed than others. Plant communities range from pastureland, shrub thicket to mixed conifer-hardwood forest. The mixed conifer-hardwood forest, which lies on the south and west sides of the proposed project area are dominated by mature Douglas fir and bigleaf maple with red alder, western red cedar and western hemlock. The shrub understory includes Indian plum, salal, hazelnut, vine maple, Oregon grape, rose and elderberry.

The pastureland constitutes the most extensive habitat type within the project area, occupying most of the bench areas not too steep for farming or grazing. Historic pastureland is being invaded over much of the site by shrubs such as Scotch broom and blackberries as grazing practices have changed. Those area still actively grazed are dominated by common pasture grasses such as colonial bentgrass, velvetgrass, orchard grass and tall fescue. Weedy forbs present include mullein, thistles, chickweed and English plantain.

**Environmental Effects**

### 1. Alternative 1 (No Action)

No restoration would take place. Natural reforestation would not occur or happen very slowly (decades) due to the compaction, invasive species, and grass competition. Scotch broom and other invasive plants would continue to increase in area and density. The quality and quantity of desirable vegetation would continue to decrease.

### 2. Alternative 2 (Proposed Action)

The proposed action of burning, ripping, and planting trees and shrubs will enable us to restore this pasture to it's original vegetation type that existed in the early 1900's. Aerial photos and written documentation show that a mature conifer forest existed prior to the land clearing efforts that converted this site to pasture.

Burning would help to eliminate the existing Scotch broom (and it's seed) that currently dominates much of the acreage. This aggressive plant has the ability to hold on to a site for many years, effectively shutting out any other species including trees from the site.

Ripping the site would facilitate the planting and subsequent growth of the planted trees and shrubs. This site is severely compacted due to grazing and equipment usage for up to the past 60 years or more. Tree planting efforts and the tree's subsequent growth potential would be severely compromised on such a compacted site.

A mixture of tree and shrub species native to the site would be planted following site prep treatments. This may include tree species such as Douglas-fir, western hemlock, western redcedar, grand fir and bigleaf maple. Other species that may be planted are vine maple, Oregon grape and huckleberry. Up to 15 percent of the area would not be planted with trees to create gaps up to an acre in size. This type of treatment would help to restore a diverse forest dominated by conifers that once existed on this site.

## *C. Special Status/Attention Species And Habitats - Terrestrial*

This section describes the project's effects on special status and special attention (e.g., survey and manage, protection buffer) species with habitat within the project area, or that would be affected by project activities.

The project site is a modified environment consisting of pastureland, which has been invaded by invasive plants over portions not heavily grazed or hayed curing the last 5 years.

No Late Successional Habitat, including snags and coarse woody debris, is present within the project area. Therefore the project would have no effect on the retention of 15 percent Late Successional stands. In addition, there are no special habitats within the project area.

## 1. Plants

**Affected Environment and Environmental Effects**

There is a very low probability that any Special Status or SEIS Special Attention (includes Survey and Manage) plant species exist at or near the project area because there is a lack of known sites in the vicinity and because of the already existing disturbed nature of the site.

## 2. Wildlife

**Affected Environment**

No known Special Status and Special Attention Wildlife Species are potentially affected by this project.

**Environmental Effects**

***a) Alternative 1 (No Action)***

Riparian Reserve habitat would remain the same. There would be no effect on northern spotted owl or osprey.

***b) Alternative 2 (Proposed Action)***

## 3. Cumulative Effects

No cumulative effects to vegetation are expected because of the limited area and scope of the project. All alternatives are predicted not to result in a trend toward

federal listing, loss of population viability, or elevation of status to any higher level of concern.

## *D. Invasive Plant Species*

**Affected Environment**

The project area was surveyed for noxious weeds and invasive species. The following "Established Infestation" invasive non-native plant species were found on the project site.

| | |
|---|---|
| *Cytisus scoparius* | Scotch Broom |
| *Chrysanthemum leucanthemum* | Ox-eye daisy |
| *Digitalis purpurpea* | Fox Glove |
| *Hocus lanatus* | Velvet grass |
| *Hypericum perforatum* | St. John's wort |
| *Rubus discolor* | Himalayan blackberry |
| *Cirsium arvense* | Canada thistle |
| *Hedera helix* | English ivy |

**Environmental Effects**

### 1. Alternative 1 (No Action)

The Scotch broom and blackberry would be continually cut until the overstory canopy was dense enough to outshade their growth. The current rate of spread of the other invasive species would be maintained.

### 2. Alternative 2 (Proposed Action)

Burning of the cut weeds should help reduce the population by decreasing the seed source and killing any new sprouts. The seeding/planting of native vegetation on the site would re-establish desirable vegetation over weeds.

## *E. Cultural and Historical*

**Affected Environment**

The Native American use of the area and early history are described in Appendix C.

**Environmental Effects**

### 1. Alternative 1 (No Action)

No change. Any sites present would not be adversely affected. However, the opportunity to find sites would not be enhanced.

### 2. Alternative 2 (Proposed Action)

Removal of vegetation by burning would greatly improve the effectiveness of a cultural resource survey. Post-burning inventory would be conducted. Any sites identified would be evaluated for significance and managed according to the cultural site use category to which the property was assigned.

## *F. Recreation And Visuals*

**Affected Environment**

The project area is located along Marmot Road, a Clackamas County historic road and the Sandy River. The area is managed as a proposed ACEC.

The project area falls within a Visual Resource Management Class II category, which calls for managing BLM lands for low levels of change to the characteristic landscape.

**Environmental Effects**

### 1. Alternative 1 (No Action)

Scenic values would remain the same.

### 2. Alternative 2 (Proposed Action)

The eventual reforestation of the site will gradually change the scenic values of the project area along the Marmot Road. The site is not visible from the Sandy River. Recreation use would not be encouraged at this location until a plan is written for the newly acquired lands in the Sandy.

## *G. Conformance With Land Use Plans, Policies, and Programs*

All alternatives, unless otherwise noted, are in conformance with the following documents that provide the legal framework, standards, and guidelines for management of BLM lands in the Cascades Resource Area:

- *Salem District Record of Decision and Resource Management Plan*, May 1995, pp. 5-6 (ACS objectives), 9-15 (Riparian Reserves), 28-32 (Special Status/Attention Species and Habitat), 36-37 (Visual Resources), 41 (Socioeconomic Conditions), 64-67 (Noxious Weeds), Appendix C (Best Management Practices).

  - **ACS Objectives and Riparian Reserves:** All alternatives are predicted to result in the maintenance of ACS objectives. Additionally, Alternative 2 would restore ACS objectives 2 and 4. (Appendix B)
  - **Special Status/Attention Species and Habitats:**

    - No surveys are required.
    - All alternatives are predicted not to result in a trend toward federal listing, loss of population viability, or elevation of status to any higher level of concern (Chapter 3, section C).
  - **Visual Resources:** Alternative 2 is consistent with the visual resource management objectives (Appendix A).
  - **Socioeconomic:** Alternative 2 provides social and economic benefits to local communities through contract work associated with the project. Alternative 1 appears not to be in conformance because it does not contain a provision for contract work that could contribute to the local economy.
  - **Invasive Weeds:** Alternative B is predicted to avoid increasing most invasive weeds beyond controllable levels, while invasive weeds will continue to increase under Alternative A. (Chapter 3, section D).
  - **Best Management Practices:** The proposed action contains applicable Best Management Practices described in the RMP, Appendix A, to maintain water quality and reduce impacts to soil productivity while meeting other resource management objectives (Chapter 3, section A).

- *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl, April 1994.*
  - Pursuant to the Salem District Resource Management Plan/Final Environmental Impact Statement, page 4-96, the Salem District RMP is supported by and consistent with the Record of Decision and its associated Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (FSEIS). Since the action alternatives are consistent with the RMP, these alternatives are also consistent with the Record of Decision.
  - Watershed Analysis: The Upper Sandy Watershed Watershed Analysis was done in 1996. The watershed analysis indicates a landscape pattern dominated by openings forms an east/west band across the watershed that divides large continuous forest landscape areas to the north from those to the south. This dramatic landscape scale separation of forest connectivity may have implications to species linked to late-successional forest.
- *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (ROD, January, 2001) and the Final Supplemental Environmental Impact Statement for Survey and Manage, Protection Buffers, and Other Mitigation Measures in the Northwest Forest Plan, November 2000.* No surveys were conducted on the bench lands since they are not forested at this time.

- *Formal and Informal Consultation on Fiscal Years 2002-2003 Projects within the Willamette Province that May Disturb Northern Spotted Owl and/or Bald Eagles [Log #: 1-7-02-F-630], May 2002.* Alternative 2 follows direction described in this document.

- *Implementation of 2001 Survey and Manage Annual Species Review, June 2002.* This memo updates "Survey and Manage" species direction. Alternatives 2 follows survey protocols described in this document.

# IV. Chapter 4 - Public Involvement and Consultation

## *A. Public Involvement*

Public scoping for this project is described in Chapter 1, section E. The EA and FONSI will be made available for public review from October 1 to 31, 2002. The notice for public comment will be published in a legal notice by local newspapers of general circulation (Albany Democrat Herald); sent to those individuals, organizations, and agencies that have requested to be involved in the environmental planning and decision making processes; and posted on the Internet at http://www.or.blm.gov/salem/html/planning/index.htm under Environmental Assessments.

Comments received in the Cascades Resource Area Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before October 31, 2002 at 4:00 PM, Pacific Daylight Saving Time, will be considered in making the final decisions for these projects. Office hours are Monday through Friday, 7:30 A.M. to 4:00 P.M., closed on holidays.

## *B. Endangered Species Act (ESA) Consultation*

**Terrestrial Wildlife:** *Northern spotted owl:* The effect call is "no effect", since the area has no owls present and no critical habitat. *Bald eagle:* The effect call is "no effects". The proposed project is outside the disturbance range of the bald eagle, which is 0.25 miles of a known bald eagle nest or communal winter roost site.

**Fish:** Section 7 consultation with National Marine Fisheries Service is not required because the fish biologist has determined that the project would have "no effect" on ESA listed fish stocks found in the Sandy River Basin; specifically, Lower Columbia River steelhead, Lower Columbia River Chinook and Lower Columbia River chum (EA Chapter 3, Section A).

# V. EA Appendices

## *A. Appendix: Environmental Elements*

In accordance with law, regulation, Executive Order and policy, the interdisciplinary team reviewed the elements of the environment to determine if they would be affected by the proposed action (i.e., Alternative 2) described in Chapter 2. The following two tables summarize the results of that review. Chapter 3 contains a discussion of the environmental effects related to the elements of the environment (i.e., soils, water, fish, vegetation, wildlife, cultural and historical, recreation, and visuals).

Table 2 lists the critical elements of the environment, which are subject to requirements specified in statute, regulation, or Executive Order. This table also contains the interdisciplinary team's predicted environmental effects per element if the activities of proposed action (i.e., Alternative 2) described in Chapter 2 of the Environmental Assessment were implemented.

**Table 2: Critical Elements of the Environment**

| CRITICAL ELEMENTS OF THE ENVIRONMENT | ENVIRONMENTAL EFFECT | INTERDISCIPLINARY TEAM'S COMMENTS |
|---|---|---|
| Air Quality | Minimal Effect | There would be a short-term increase in smoke during the burning for a period not to exceed 8 hours. Heavy equipment would be used at the project site for ripping, but is not expected to have an adverse impact on air quality and would comply with the provisions of the Clean Air Act. |
| Areas of Critical Environmental Concern | The project area is a proposed ACEC. | |
| Cultural, Historic, Paleontological | Minimal Effect | There are no known cultural sites located within the project area. No cultural or archeological resources are known or expected to be present in the proposed project area. The site will be surveyed after burning to search for any resources.<br>The project complies with the August 1998 protocol for managing cultural resources on lands administered by the BLM in Oregon. If during the implementation of the project, cultural resources are found, the operations would be immediately halted and the Field Manager notified. Operations would be resumed only with the Field Manager's approval after appropriate mitigation measures were designed and implemented based on recommendations from the District Archaeologist .to provide any needed protection of those resources. |

| **Table 2: Critical Elements of the Environment** | | |
|---|---|---|
| CRITICAL ELEMENTS OF THE ENVIRONMENT | ENVIRONMENTAL EFFECT | INTERDISCIPLINARY TEAM'S COMMENTS |
| Environmental Justice (Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, 2/11/94) | Minimal Effect | The proposed action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. |
| Flood Plains | No Effect | The project is above the floodplain of the Sandy River. Effects to soil, water and fish are described in Chapter 3 (section A). |
| Hazardous or Solid Wastes | No Effect | The site has been surveyed for hazardous materials as required for any land purchases and test wells for the gravel permit application were tested and sealed. |
| Invasive, Nonnative Species (includes Executive Order 13112, Invasive Species, 2/3/99) | Effects to invasive, nonnative species are described in Chapter 3 (section D). | |
| Native American Religious Concerns | None | No Native American religious concerns were identified during the public scoping period. |
| Prime or Unique Farm Lands | None | This element was not identified as a major issue. There is no prime or unique farmlands located within the project area. |
| Threatened or Endangered Plant Species or Habitat | None | There are no known threatened or endangered plant species or habitat located within the project area. |
| Threatened or Endangered Wildlife Species or Habitat | None | There are no known threatened or endangered wildlife species or habitat located within the project area. |
| Threatened or Endangered Fish Species or Habitat | None | Project would have no effect on T&E fish species found downstream of the project area in the Sandy River. |
| Water Quality (Surface and Ground) | Effects to water quality are described in Chapter 3 (section A). | |

| Table 2: Critical Elements of the Environment | | |
|---|---|---|
| CRITICAL ELEMENTS OF THE ENVIRONMENT | ENVIRONMENTAL EFFECT | INTERDISCIPLINARY TEAM'S COMMENTS |
| Wetlands/Riparian Zones (Executive Order 11990, Protection of Wetlands, 5/24/77) | Effects to soils, water and fish are described in Chapter 3 (section A). | |
| Wild and Scenic Rivers | None | The Sandy is not a wild and Scenic River at this location. |
| Wilderness | None | There is no wilderness located within the project area. |

Table 3 lists other elements of the environment that are subject to requirements specified in law, regulation, policy, or management direction. This table also contains the interdisciplinary team's predicted environmental effects per element if the activities of proposed action (i.e., Alternative 2) described in Chapter 2 of the Environmental Assessment were implemented.

| Table 3: Other Elements of the Environment | | |
|---|---|---|
| ELEMENTS OF THE ENVIRONMENT | ENVIRONMENTAL EFFECT | INTERDISCIPLINARY TEAM'S COMMENTS |
| Adverse Impacts on the National Energy Policy (Executive order 13212) | None | This project does not propose any activities related to energy development, production or distribution. |
| Wildlife Species/Habitat: Special Status and Special Attention, (including mammal Survey and Manage, and mollusks) | None | No special habitats or species are known to be present. |
| Fish Species with Bureau Status including critical habitat | Effects to fish are described in Chapter 3 (section A) of the EA. | |
| Key Watershed | None | The project is not within a key watershed. |
| Land Uses (including mining claims, mineral leases, etc.) | None | There are no known mining claims, mineral leases, etc. located within the project area. |
| Minerals | None | The proposed action does not include the extraction of any mineral resource. As such, this element will not be affected by the proposed action. |
| Municipal Watershed | None | This project is not within a municipal watershed. |
| Plant Species/Habitat: (including Survey and Manage, and protection buffer species) | None | There are no known Bureau Sensitive and Special Attention plant species or habitat located within the project area. |

| **Table 3: Other Elements of the Environment** | | |
|---|---|---|
| ELEMENTS OF THE ENVIRONMENT | ENVIRONMENTAL EFFECT | INTERDISCIPLINARY TEAM'S COMMENTS |
| Recreation | None | No recreation activities occur on this location at this time. |
| Rural Interface Areas | None | There is no rural interface area located within the project area. |
| Soils | Effects to soils are described in Chapter 3 (section A) of the EA. | |
| Special Areas (Within or Adjacent) | None | There are no special areas located within or adjacent to the project area. |
| Visual Resources | Effects to visual resources are described in Chapter 3 (section F) of the EA. | |
| Water Resources (including Aquatic Conservation Strategy Objectives, beneficial uses [Salem FEIS Chapter 3-9], DEQ 303(d) listed streams, water temperature, sedimentation, water quantity, etc.) | Effects to water resources are described in Chapter 3 (section A) of the EA. Also see Appendix B for an evaluation of the project with regard to Aquatic Conservation Strategy objectives. | |

## *B. Appendix - Aquatic Conservation Strategy Objectives*

| **Table 4: Documentation of the Minsinger Bench Restoration Projects' Consistency with the Four Components of the Aquatic Conservation Strategy** |
|---|
| Component 1 - Riparian Reserves: The Record of Decision (C-30) and the Salem District Resource Management Plan (p. 10) specify Riparian Reserve widths. The Riparian Reserve boundaries will be established consistent with this direction. RR width = 180 ft for non-fish streams. |
| Component 2 - Key Watershed: The projects are located within the Upper Sandy watershed, which is not a designated key watershed. |
| Component 3 - Watershed Analysis: The Upper Sandy Watershed Analysis document was completed in 1996. The analysis states terrestrial connectivity is compromised by the large openings that form an east-west band across the watershed. |
| Component 4 - Watershed Restoration: Returning the pasturelands to a forested condition ties in with restoration objectives for this watershed. |

| **Table 5: Documentation of the Minsinger Bench Projects' Consistency with the Nine Aquatic Conservation Strategy Objectives** |
|---|
| **ACS Objective 1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.**<br><br>Both alternatives would result in a more forested condition. Alternative 1 would take a longer time to establish forest. *Both alternatives would maintain and restore the attainment of ACS Objective 1.* |
| **ACS Objective 2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. The network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian dependent species.**<br><br>Both alternatives would work toward restoring spatial connectivity between watersheds for intact refugia. *Maintains and restores the attainment of ACS Objective 2.* |
| **ACS Objective 3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.**<br><br>Either alternative would not impact the shorelines, banks and bottom configurations. *Does not retard or prevent the attainment of ACS Objective 3.* |

| **Table 5: Documentation of the Minsinger Bench Projects' Consistency with the Nine Aquatic Conservation Strategy Objectives** |
|---|
| **ACS Objective 4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.**<br><br>Alternative 1: The current condition of water quality would be maintained. *Does not retard or prevent the attainment of ACS Objective 4.*<br>Alternative 2: Though there is a possibility of sediment entering streams through site restoration activities, the potential is reduced with the implementation of "Best Management Practices" (see section A, Chapter 3) Planting the site after the removal of facilities may improve summer stream temperatures adjacent to the project area in the long term. *May restore and does not retard or prevent the attainment of ACS Objective 4.* |
| **ACS Objective 5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.**<br><br>Alternative 1: The current condition of the sediment regime would be maintained. *Does not retard or prevent the attainment of ACS Objective 5.*<br><br>Alternative 2: Implementation of "Best Management Practices" would minimize impacts to the sediment regime or an increase in sediment moving into streams. Restoring the site would help return the sediment regime to a more natural state though de-compacting the soil which would allow more water infiltration and help revegetation. *Does not retard or prevent the attainment of ACS Objective 5.* |
| **ACS Objective 6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.**<br><br>Alternative 1: The current condition of in-stream flows would be maintained. *Does not retard or prevent the attainment of ACS Objective 6.*<br><br>Alternative 2: The current condition of in-stream flows would be maintained. *Does not retard or prevent the attainment of ACS Objective 6.* |
| **ACS Objective 7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.**<br><br>Alternative 1: The current condition of floodplain inundation and water tables would be maintained. *Does not retard or prevent the attainment of ACS Objective 7.*<br><br>Alternative 2: The current condition of floodplain inundation and water tables would be maintained. *Does not retard or prevent the attainment of ACS Objective 7.* |

| **Table 5: Documentation of the Minsinger Bench Projects' Consistency with the Nine Aquatic Conservation Strategy Objectives** |
|---|
| **ACS Objective 8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability**.<br><br>Alternative 1: The current condition of plant communities within riparian areas would be maintained. *Does not retard or prevent the attainment of ACS Objective 8.*<br><br>Alternative 2: Site restoration activities should improve the current condition of plant communities within the affected riparian area. *Does not retard or prevent the attainment of ACS Objective 8.* |
| **ACS Objective 9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.**<br><br>Alternative 1: The current condition of habitat to support riparian-dependent species would be maintained. *Does not retard or prevent the attainment of ACS Objective 9.*<br><br>Alternative 2: Site restoration activities should improve habitat for riparian-dependent species. *Does not retard or prevent the attainment of ACS Objective 9.* |

## *C. Appendix: Information about the Minsinger Bench lands*

### 1. Location

The Minsinger Bench area is located along the north (right) bank of the Sandy River between about River Miles 33 and 34. The area extends across elevated terraces above the Sandy River, with the proposed project area located on two benches composed of glacially deposited gravels. The project area is at the southwestern edge of a broad upland flat known as Minsinger Bottom that extends from the Sandy River north to the western foothills of the Cascade Range. Minsinger Bottom occupies an area about two miles east-west by 0.6 mile (1 km) north-south. Elevations across this area range from about 860' along the Sandy River to 1,060' at the base of the foothills. The glacially deposited bench that forms much of the Minsinger Bottom averages about 1,000' in elevation. These benches are gently rolling in character.

### 2. Geology

The upper Sandy River drains the western and southern slopes of Mt. Hood and, by way of its tributary the Salmon River, the rugged hills to the south of Mt. Hood. As is typical of streams on the west side of the Cascade Range, it is a dynamic river, rising and falling swiftly in response to changes in precipitation. The Reverend Daniel Lee (Lee and Frost 1968 (1844): 158), traveling though the area in 1838, reported that the Sandy River in flood stage "overleaps its banks and rolls on in a sweeping torrent, filled with volcanic sand, and stones, and rubbish, causing perpetual changes in its bed." Along the southern edge of Minsinger Bottom, the Sandy is a swift, rock-bottomed stream with frequent riffles and shallow rapids. There is a well-defined rapid with bedrock exposures at the mouth of Alder Creek near the project area.

Changes in the river's course are common during major flood episodes. Recent studies to identify traces of the Barlow Road [ii] have noted that the 1964 flood destroyed portions of the old road alignment through the North Bank segment upstream of the Minsinger Bench area. Comparison of the 1938 aerial photograph with the 1986 edition indicate that changes have occurred in the river channel forming the southern edge of Minsinger Bench between those two dates, probably in 1964. These changes include abandonment of a portion of the 1938 channel and creation of a new main channel. The most substantial change was cutting a new channel across a point of land that formed the north bank of the river opposite the mouth of wildcat creek in 1938.

The project area includes portions of two perennial tributaries of the Sandy River. As neither stream has been named, for convenience they are hereinafter referenced as the East and West Creeks. Both creeks drain portions of the southern slopes of the Sandy River/Little Sandy River divide. There may have been some minor channel modifications of these streams with agricultural settlement of the area over the past century. Including the creation of stock ponds. For most of their lengths within the project boundaries, the two creeks are characterized by low banks and shallow and gravelly-rock channels. The

West creek empties into the Sandy River at about RM 33.15 the confluence of East Creek and the Sandy is at about RM 33.4.

## 3. Native American History

Native American use of the surrounding area can be traced to archaeological finds near the town of Sandy. Research on these sites provides an occupation date of possibly 4,000 years ago. Many of the Native Americans associate with the area were not permanent residents, but in transition and travel mode. They used the trans-Cascadian trail, the forerunner of the Barlow Road System. Early Euro American contacts described encounters with Native Americans collecting berries for winter storage. Archaeological Investigation Northwest, Inc. (AINW) performed systematic studies of the area for the aggregate development proposal and no evidence of Native American occupation on the site was encountered.

## 4. Early Euro American Settlement History

The earliest Euro American use of the bench area was as part of the Barlow Trail. The modern Marmot Road is laid directly on top of this portion of the trail.

The scattered written references to this general area in the early and mid-nineteenth century indicate that it was forested at the time. The first known Euro American description of the area in September (Lee and Frost 1968 158) noted that the upper Sandy River valley was "in some parts one-fourth of a mile wide, exhibits piles of sand and rounded stones, and heaps of decaying drift wood, scattered along its surface, with clumps of willows and dogwood, and a young growth of firs and white pines, and is carpeted here and there with grass. Lee's route down the Sandy River possibly took him across the Minsinger Bottom area but his account contains no specific references to this location. A later (October 1844) traveler in Lee's footsteps mentioned a brief pause in the vicinity of Minsinger Bottom that indicate that the area was not occupied entirely by woodlands:" we left the stream & turned short to the right & soon came to a kind of Brushy opening of rich soil & some grass whare [sic] we stopped to graze and hour" (Clyman 1984:129) That this is a reference to the Minsinger Bottom area is suggested by the route that Clyman followed after the pause for grazing "along a narrow ridge amongst the tall Firr [sic] and the emmence [sic] large Hemlock timber." Both Lee and Clyman reference this ridge, which was probably what is now known as the Devil's Backbone, immediately northwest of Minsinger Bottom. Clyman also observed that "during the whole of today the country has been burned [.] some still on fire & some had been burned last year."

About a year after Clyman's trip through the area, Sam Barlow, Jowl Palmer, and a small group of other emigrants blazed the route of what was to become the Barlow Road, often following existing Indian trails. Palmer's journal refers to "some small prairies and several beautiful streams which meandered through the timber," possibly in the general area as they reached the Devils Backbone the following day (Palmer 1966 [1847]:82). On the other hand, Beckham and Hanes, who reviewed numerous diaries and journals of emigrants on the Barlow Road, have described (1992:8) Minsinger Bottom as "heavily forested." The follow-up report on the Barlow Road by Clackamas county (1993:17) also

noted the "The heavy timber and scarce grass reference [of one emigrant] appears to apply to the Rock Corral area (just east of Minsinger Bottom) and the present day pasture land of Minsinger Bottom."

More detailed observations on the vegetation of the Minsinger Bench area are provided in the 1872 field notes of the General Land Office (GLO) surveyor (Meldrum 1872). In the survey of the boundaries of Sections 20 and 21, the area is described as being wooded predominantly in fir and hemlock (presumably Douglas-fir and western hemlock). Other trees noted as present included maple, cedar, and "shittenwood" (cascara), which were probably more common on the Sandy River bottoms and along tributary drainages than on higher ground. A fenced agricultural field occupying about 10-15 acres was recorded along the Section 20/21 boundary just north of the Barlow Road and a "deadening" (land prepared for clearing by girdling trees) was noted at the NE/NW corner of Sections 20/21. There is no information in either Meldrum's field notes or on the related map indicating who was farming the field or clearing the land to the north, nor were there any cabins or farms noted in the vicinity.

The first Euro American settlement of the subject property was recorded in 1872 and attributed to Philip Moore. Records from 1873 showed John Moore occupied a portion of the property and the house was located near the road. Between 1873 and 1886 the property was transferred to Herricks who acquired additional land through the Homestead Act. Parts of the property were sold in 1891. In 1895 Christopher Minsinger began consolidation of the property resulting in the Minsinger Stock Farm or Hillcrest Ranch. The Minsinger Stock Farm was created to raise and breed Belgian workhorses, used by the Star Sand Company of Portland for hauling aggregate carts. After Minsinger died in 1934 the property changed ownership nine times in the span of 23 years. A 1938 aerial photograph of the area (next page) shows much of the Minsinger Ranch still forested including most of the area south of the Road. The timber was harvested over a period form the 1930s to the 1950s and used to graze cattle and raise grass crops.

According to Clackamas County's Comprehensive Plan, Section 9, Open Space, parks, and Historic Sites, subsection of "Historic Landmarks, Districts, and Transportation Corridors", Clackamas County has adopted:

*"… the Barlow Road Historic Corridor as defined by the Barlow road Survey Project and the Barlow Road Background Report and Management Plan as a Clackamas County Historic Corridor. All provisions of the Historic Landmarks, Historic District and Historic Corridors Ordinances shall apply to the designated sites and historic corridor the Barlow Road…."*[iii]

The Marmot Road Corridor across the Minsinger Ranch is part of the designated Barlow road Historic Corridor but is a "third priority road segment"[iv]. Clackamas County ZDO 707.03 (B)(2) states that third priority property segments shall be allowed to develop for primary uses allowed in the underlying zone, but where physical evidence of the Barlow Road exists, property owners are encourage to preserve the evidence. AINW completed an assessment of the area and found no evidence of the old Barlow Road within the project area.


Figure 9. 1938 aerial photograph of ranch.

[i] Newton, David J. and Associates. Supplement to PAPA Application Minsinger Bench Site, Clackamas County, Oregon. DNA Project No. 814-103. February 10, 1999.

[ii] Beckham and Hanes 1992; Clackamas County 1993)

[iii] Section 2.0 of Policies, page 164 of the Clackamas County Comprehensive Plan with cross reference in ZDO 707.03 (B).

[iv] Cultural Resource Inventory of the Proposed Minsinger Bench Aggregate Development, Clackamas County, Oregon. Ellis, David V. and Chapman, Judith S. Archaeological Investigations Northwest, Inc., Report #135, 1997. Page 28 (Appendix VIII).

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| Table 6: Interdisciplinary Team | | | | |
|---|---|---|---|---|
| **Resource** | **Name** | **Title** | **Initial** | **Date** |
| Cultural Resources | Fran Philipek | | | |
| Hydrology/ Water Quality | Patrick Hawe | | | |
| Native Plant Restoration | Marilyn Lowery | | | |
| Botany TES and Special Attention Plant Species | Claire Hibler | | | |
| Wildlife TES and Special Attention Animal Species | Jim Irving | | | |
| Fisheries | Dave Roberts | | | |
| Wild and Scenic Rivers/ Wilderness | Nick Teague | | | |
| Recreation Sites and Visual Resources Management and Rural Interface | Nick Teague | | | |
| Soils | John Caruso | | | |
| Fire Ecology | Sam Caliva | | | |
| Silviculture | Dave Rosling | | | |
| Team Lead/Ecology | Barbara Raible | | | |
| NEPA / Plans | Carolyn Sands | Natural Resources Specialist | | |